

Self-Calibrating Greenhouse Gas Balloon-Borne Sensor, Phase II

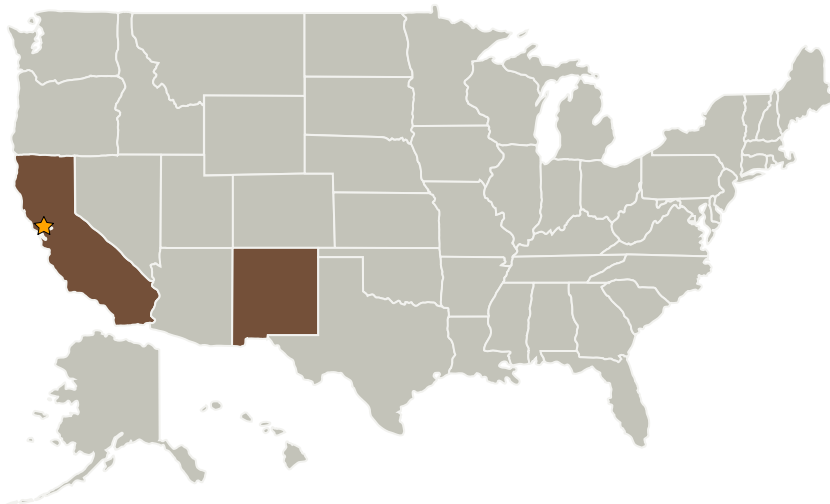
Completed Technology Project (2009 - 2012)



Project Introduction

Understanding the sources and sinks of carbon dioxide and other greenhouse gases has been recognized as critical to predicting climate change and global warming. A variety of research studies funded by DOE, NSF, NASA and NOAA to measure the fluxes and fluctuations of CO₂ profiles throughout the troposphere and lower stratosphere have provided a great deal of useful information, but the instrumentation used has been restricted to airplane or large stratospheric-type balloon gondola platforms where a few measurements are very expensive. We propose a new approach where low cost, extensive measurement campaigns can be made using standard meteorological balloons. In this SBIR program, Southwest Sciences is developing a lightweight, inexpensive greenhouse gas sensor suitable for balloon sonde measurements. Using a novel measurement technique, this sensor will provide dry air mixing ratios of CO₂ without the need for concurrent measurements of temperature, pressure or moisture. The Phase 1 research successfully demonstrated the viability of this approach and in Phase 2, a prototype sensor will be built and field tested in a series of balloon-sonde flights.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Southwest Sciences, Inc.	Supporting Organization	Industry	Santa Fe, New Mexico

Primary U.S. Work Locations

California	New Mexico
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Project Transitions

**November 2009:** Project Start**May 2012:** Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.3 In-Situ Instruments and Sensors
 - └ TX08.3.4 Environment Sensors